

2 COMMUNITY PROFILE

This community profile for Benton County includes the geography and environment, population and demographics, land use and development, housing and community development, employment and industry, and transportation and commuting patterns. Analyzing these components of Benton County can help in identifying potential problem areas, and can serve as a guide for incorporating the goals and ideas contained in this mitigation plan into other community development plans.

2.1 Geography and Environment

2.1.1 Location

Benton County is located in south-central Washington in the middle of the Columbia Basin (see Figure 2-1 at the rear of this chapter). The Columbia River forms the County's northern, eastern, and southern boundaries, forming an arc some 120 miles long (from river mile 276 to river mile 396). Benton County is bordered to the west by Yakima and Klickitat counties, to the north by Grant County, to the east by Franklin and Walla Walla counties, and to the south by two Oregon counties, Umatilla and Morrow. Benton County covers an area of 1,722 square miles. The highest elevation in the County is 3,629 feet, located in the Rattlesnake Mountains north of Prosser. The lowest elevation is 265 feet, found near Plymouth along the north bank of the Columbia River. The Yakima River flows from west to east through the middle of the County. The Yakima, Snake, and Walla Walla rivers join the Columbia River within 30 miles of each other along Benton County's eastern border near Sacajawea State Park.

Incorporated cities and towns in Benton County include Benton City, Kennewick, Prosser, Richland, and West Richland (see Figure 2-2 at the rear of this chapter). Most of the unincorporated areas of the County are rural areas with low-density agriculture-based land use. However, there are also several distinct unincorporated communities, including Paterson, Plymouth, Finley, and Whitstran. Benton County was created in 1905 from eastern portions of Yakima and Klickitat Counties. Prosser is the county seat.

Of the County's five incorporated communities, Prosser, Benton City, and West Richland are located adjacent to the Yakima River, Richland is at the confluence of the Yakima and the Columbia rivers, and Kennewick borders the Columbia River downstream of Richland. Richland and Kennewick, together with Pasco (across the Columbia River in Franklin County) are collectively referred to as the Tri-Cities due to their interlocking economic dependence and their geographic proximity to each other. The unincorporated community of Finley lies to the southeast along the Columbia River, just outside of Kennewick. Elevations for all of the communities are in the 300 to 700 foot range. The two unincorporated communities of Plymouth and Paterson border the Columbia River at the County's southern border below McNary Dam. Elevations of Plymouth and Paterson are 300 feet and 400 feet, respectively.

Benton County is one of the top ten agricultural counties in Washington, based on the total value of all agricultural products (crop and livestock). The area produces carrots, onions, potatoes, wheat, barley, oats, apples, grapes, and cherries. In addition to crop production, there is a significant food-processing industry in the Tri-Cities. Area plants produce French fries, grape juice, baby carrot sticks, and other foods. Winter wheat is the dominant crop cover. Washington State University Irrigated Agriculture Research and Extension Center, one of the world's largest irrigated experiment stations, is located in Benton County approximately four miles north of

Prosser. In recent years the wine industry has become a rapidly growing segment of the agriculture industry, with many new wineries opening. The state's largest winery, Columbia Crest, is located at Paterson.

2.1.2 Climate

Benton County is located in the central part of the Columbia Basin, which has a landform surrounded by mountain ranges that have a pronounced effect on the region's climate. The following are characteristics of the climate as summarized in Benton County's Comprehensive Plan (1998; source National Weather Service):

Geomorphology and Weather

- The Cascade Range to the west obstructs easterly flows of moist air into the basin.
- The Rocky Mountain Range and ranges in southern British Columbia protect the basin from the more severe winter storms.
- Occasionally an outbreak of severely cold weather will penetrate into the basin for damaging spring or fall freezes.
- The County experiences strong seasonal winds associated with rapidly moving weather systems.

Sunshine and Growing Season

- The growing season is approximately 185 days from mid-April to mid-October.
- The percent of possible sunshine each month is 20-30 percent in winter, 50-60 percent in spring, and 80-85 percent in mid-summer.
- The number of clear days each month increases from about 5 in winter to 20 in summer.

Temperature

- Dry with mild winters and warm sunny summers, cool summer nights;
- Summer temperatures in the warmest summer months can exceed 90⁰ F from 26 to 77 days with nights dropping to 50⁰ F, day time temperatures can exceed 103⁰ F for about four days in two out of ten summers;
- Winter afternoon temperatures range from 35 to 45⁰ F with night time readings at 20 to 30⁰ F, minimum temperatures can be 6⁰ F or lower on four nights in two out of ten winters, afternoons remain below freezing on about one third of all January days;
- It can get cold. In 1949-50, night time winter temperatures were less than 0⁰ F on 18 nights, minus 15⁰ F or lower on seven nights, and minus 23⁰ F on one night (sustained cold temperatures were also experienced January-February 1996);
- Warm winters do occur - in 1957-58, the lowest temperature was 19⁰ F;
- Number of days with maximum temperatures below freezing ranges from 2 to 46.

Moisture and Precipitation

- Mean annual precipitation is from 5 to 10 inches, with from 10 to 15 inches in discrete areas on the Horse Heaven and Rattlesnake hills.
- Approximately 70 percent of precipitation occurs between November and April averaging one inch per month as either rain or snow in mid-winter months;
- There can be no rain from 3 to 6 weeks at a time in mid-summer.

Storms and Weather Events

- Thunderstorms occur on 10 to 15 days between March and October, usually accompanied by light rainfall, but hail and heavy showers can occur;
- Winter season snowfall has ranged from less than ½ inch (1957-58) to 44 inches (1915-16), accumulations have ranged from 4 inches to 21 inches (February 1916);
- Snow cover can melt rapidly by rain or warm Chinook winds;
- Severe winter and spring flooding of the lower Yakima River can occur as a result of snowmelt and/or river icing conditions, such as occurred in December 1995 and February 1996;

2.1.3 Soils and Geology

The soils in Benton County are generally suitable for both agriculture and structural development, with localized areas of constraint relating to slope, geo-hydrology or pockets of sandy soils and fines. Soils are very susceptible to wind and water erosion once stripped of their natural cover. However, in undisturbed condition the indigenous shrub steppe and bunch grass vegetative cover is adapted to hold basin soils in place. When stripped of natural cover, prevention of erosion requires the application of deliberate and aggressive management techniques. (Benton County Comprehensive Plan)

Generally, but with some notable localized exceptions, the addition of water and fertilizer to soils anywhere in Benton County will result in productive agriculture. The principal exceptions are on steep erosive slopes, in pockets of very sandy soils, or where near surface basalt formations are accompanied by thin soils and poor hydrologic conditions.

Benton County is located in the central Columbia Plateau where two of the most catastrophic geologic events in earth history took place: enormous outpourings of basaltic lava flows 17.5 to 6 million years ago and giant glacial outburst floods up to 12 thousand years ago. These and related events produced the local landscape, where the Earth's youngest basalt plateau was swept by the largest documented floods in geologic history.

The northern and eastern parts of the County are part of the Pasco Basin and the southern part of the County is part of the Umatilla Basin. These basins are two of several regional structural and topographic, sediment-filled basins within the Columbia Plateau. The County is underlain by the Miocene-age Columbia River Basalt Group, a thick sequence of flood basalts that covers more than 63,000 square miles of eastern Washington, western Idaho, and northeastern Oregon. The sediments overlying the basalts include the Pliocene Ringold Formation (interlayered deposits of sand, silt, clay and gravel exposed in the White Bluffs along the Columbia River), glaciofluvial deposits of the Pleistocene Hanford formation (unconsolidated gravel, sand and silt deposits), and Holocene surficial deposits composed of windblown silt and sand and gravelly alluvium along the rivers.

The basalt sequence is over 10,000 ft thick within the downwarped Pasco Basin. Sedimentary interbeds of the Ellensburg Formation separate basalt flows and flow units especially in the upper part of the basalt sequence. Folding and faulting of the basalts under north-south compression was contemporaneous with the eruption of the basalt flows. This deformation produced the anticlinal ridges of the Yakima Fold Belt (e.g., Rattlesnake Mountain, Horse Heaven Hills and others). The fold ridges are characterized by gently dipping southern limbs and steeply dipping northern limbs that are cut by thrust or high-angle reverse faults that trend parallel to the ridges.

Deformation of these folds continued from the Miocene to the Pleistocene, and perhaps into the present. Geologic evidence of young faulting has been found on Gable Mountain at the Hanford Site and near Wallula Gap along the Rattlesnake-Wallula alignment (RAW; Reidel and others, 1994). Faults along the RAW and the northwest-trending portion of the Horse Heaven Hills are some of the major faults in eastern Washington that are considered in the evaluation of future seismic hazards in this area (Frankel and others, 2002).

2.2 Population and Demographics

Benton County was created by the Washington State Legislature on March 8, 1905. The County government consists of an elected County Commission, consisting of three full time County Commissioners. The Commissioners are elected to four-year terms in a general election. Each commissioner represents a district determined by population boundaries. Other elected county officials include: Assessor, Auditor, Clerk, Coroner, Prosecuting Attorney, Treasurer, Sheriff, and Superior Court and District Court judges.

The U.S. Census Bureau, Census 2000 reported Benton County's population at 142,475 – a 26.6 percent increase since 1990. The median age was 34.4, with approximately 70.3 percent of the County population 18 years and over. Demographically, Benton County is considered an urban county, with population in the incorporated areas of 109,248 (77 percent). Population in the unincorporated areas is 33,227 (23 percent). Approximately 86.2 percent of the population is White and 12.5 percent Hispanic or Latino. The Census reports there are 18,707 residents (14.2 percent) who speak a language other than English at home, including 6.4 percent (8,391 people 5 years and over) who speak English less than "very well." Spanish is the language other than English most often spoken at home by 13,425 residents (10.2 percent). Of those speaking Spanish at home, 6,394, or 4.9 percent of Benton County's population, speak English less than "very well."

2.3 Land Use and Development

The following information on land use and development has been excerpted from Benton County's Comprehensive Plan (1998). Benton County's economic base is "bi-modal," i.e., it is principally supported by two independent legs: a Hanford leg on the U.S. Department of Energy's Hanford Site, and the commercial agriculture leg, off the Site. The landscape of the county reflects this bi-modal characteristic.

2.3.1 Agricultural Economy

The agricultural leg occurs within the unincorporated lands outside of the Hanford Site. Here, the principal land use is commercial "dryland" and "irrigated" agriculture with its related industries such as storage, shipping, processing, and sales of chemicals and equipment.

Commercial agriculture, undertaken at a scale directed at the export market, is an intensive land use requiring:

- Vast acreages of land (especially for dryland crops);
- Dependable and large supplies of water (for irrigated crops);
- An absence of adjacent incompatible uses;
- Major storage, processing and transportation infrastructure at strategic locations;
- A supply of employees.

The agricultural industry in the Pacific Northwest generally, and in eastern Washington specifically, has these resources as well as direct rail and water transportation routes to major saltwater ports. As a result it is ideally situated to serve the huge populations of the Pacific Rim countries.

Major crops in Benton County are wheat, corn, potatoes, apples, cherries, hops, mint, alfalfa hay, wine grapes and beef cattle. The employment base for this industry generally lives in the outlying rural areas of the county, in small cities such as Prosser and Benton City, and in unincorporated rural communities such as Finley, Paterson, Plymouth, and Whitstran. The State provides technical research and support through the Agricultural Research and Experiment Station just north of Prosser.

The agricultural leg of the local economy is at present the smaller of the two legs, though it is also the more stable: it is market driven with an ever expanding customer base; its resource base (soil and water) is renewable; at the regional level it is an integrated cluster of economic components.

2.3.2 Hanford-based Economy

In 1943 what became known as the Hanford Site was developed as a site to produce plutonium for use in weapons for World War II. Approximately 51,000 workers were brought into the area to build and operate large reactors and plutonium processing plants. The top secret Manhattan Project included building the world's first nuclear reactor at Hanford and producing the plutonium for the bomb that was used over Nagasaki. Plutonium production continued for over 40 years. During that time, much of Hanford's waste was simply discharged into the ground, or stored in temporary tanks, many of which leaked. As a result, soil and groundwater in certain areas of Hanford are contaminated. In recent years, emphasis has shifted from Hanford's military role to addressing and solving the environmental legacy at the site.

The Hanford leg of the area's economy is the federally funded program activity occurring principally on the Hanford Site. The Hanford leg of the local economy, under the present level of funding provided by Congress, currently represents approximately one in four jobs in the Tri-Cities region. The current mission at Hanford is to clean up and manage the site's legacy wastes, and to develop and deploy science and technology.

Hanford is managed by the U.S. Department of Energy (DOE). DOE hires contractors to operate the site and provide cleanup services. Major contractors at the Site include Bechtel Hanford, Inc, CH2M HILL Hanford Group, Inc., Fluor Hanford, Inc.; Hanford Environmental Health Foundation; Pacific Northwest National Laboratory; and Bechtel National Inc.

The Site contains large industrial areas supported by billions of dollars of federal investment in infrastructure related to both the past and current missions. Of note are:

- Rail and road transportation systems;
- Massive water pumping and distribution systems;
- Columbia Generating Station, a fixed nuclear power plant owned and operated by Energy Northwest;
- The Fast Flux Test Facility (FFTF), the worlds only sodium cooled nuclear reactor (currently shutdown, pending final decommissioning);
- Eight decommissioned nuclear reactors;

- Numerous hazardous waste storage, disposal and processing facilities, including a waste vitrification facility under construction; and
- New hi-tech structures such as the Environmental Molecular Sciences Laboratory (EMSL), and the Laser Interferometer Gravitational-Wave Observatory (LIGO).

Within the non-agricultural sector of the Tri-Cities area of Benton and Franklin counties, Hanford employment is the principal driver of the residential and commercial construction and service sector industries. However, the peaks and valleys characteristic of the Hanford program as it is annually budgeted by Congress creates continuous uncertainty and periodic hardship for those industries and their employees, as well as local governments and special districts who must plan for and finance capital improvements. Due to federal funding cutbacks, employment at Hanford is declining. An estimated 14,500 high-paying jobs will be lost by the time the ongoing 40-year cleanup is converted to a basic site maintenance program in 2028. This has serious implications for the area's economy, which remains heavily reliant on Hanford employment.

2.3.3 Current Land Use Trends

For the first half of the 1990s there was a condition of sustained population and economic growth in eastern Washington. For the present, the cyclic booms and busts in the local economy characteristic of the 1960s through late 1980s have been replaced with a seemingly steady and prolonged period of conversion of raw land to agriculture and related industries, urban uses, and rural residential development.

At the local level the commercial retail sector within the Tri-Cities has reached a scale of regional significance with new retail stores being constructed even during the recent downsizing of the Hanford work force. Even at diminished levels, Hanford Cleanup budgets are likely to remain sizeable enough over the next 5-10 years (approximately \$1 to 1.5 billion annually), to support local economic growth.

The land use trend on the Hanford Site can be broadly described as the gradual reintegration of major portions of Hanford's resources (land, water and infrastructure) into the economy, custom and culture and regulatory authority of local jurisdictions within which the Site lies. Today the roughly 450 square miles of the Site within Benton County are being cleaned up for future uses, that in addition to federal missions will likely include non-defense related private and public sector uses. Local jurisdictions are preparing Land Use Plans for the portions of the Hanford Site within their boundaries.

2.4 Housing and Community Development

Benton County's population is housed in a total of 55,963 housing units, including 33,327 detached single-family homes (59.6 percent) (Census 2000). The remaining housing units include multiple unit apartments, 7,665 mobile homes (13.7 percent), and 289 boats, RVs, vans, or other. Approximately 32.6 percent of the housing units were built since 1980, 32.3 percent were built from 1970 to 1979, 9.1 percent were built from 1960 to 1969, and 23.2 percent were built from 1940 to 1959. The remaining 2.8 percent of the housing units were built in 1939 or earlier. The primary heating fuel for the units is electricity, serving 86.7 percent of Benton County's housing. Other sources of heating fuel are utility gas (8.5 percent), bottled gas (0.9 percent), fuel oil (1.9 percent), and wood (1.9 percent). Building construction in Benton County

is in accordance with the Uniform Building Code of 1997, Uniform Plumbing Code of 1997, Uniform Mechanical Code of 1997 and the National Electrical Code of 1997.

The City of Richland lies at the confluence of the Columbia and Yakima rivers, encompassing land on the west bank of the Columbia River, and north and south of the mouth of the Yakima River. Richland was established in 1892 as an agricultural community. In 1942, with the development of the Hanford Site, Richland was transformed from a village of 247 residents to a federally owned town of 11,000. Self-rule was re-established in 1958. Richland's current population is approximately 38,708 (2000 U.S. Census). The City covers approximately 30 square miles (18,673 acres) – 78 percent of the Richland Urban Growth Area. Richland is governed by an elected City Council. Daily operations are directed by the City Manager.

The City of West Richland is principally a bedroom community for the Tri-Cities area. The area now considered West Richland became developed in the 1950s as residents moved across the Yakima River to avoid government restrictions on the community of Richland. West Richland is governed by a Mayor and City Council. The City has a population of approximately 9,300, and continues to experience considerable growth – most of it as single-family homes. There is comparatively little commercial development, and almost no industrial land uses in West Richland. The City encompasses 22.5 square miles, most of which is undeveloped land to the northwest. A single owner holds almost 8,000 acres of the undeveloped land, known as the Lewis and Clark Ranch.

The City of Kennewick covers 22.93 square miles on the south bank of the Columbia River. Kennewick was incorporated in 1904. The City was primarily an agricultural center until the 1940s, when it began to experience growth associated with the Hanford Site. Kennewick has developed as a bedroom community and shopping destination for the region, with a current population of approximately 54,693 (2000 U.S. Census). Kennewick is governed by an elected City Council. Daily operations are directed by the City Manager.

Benton City was founded in 1909, built around railroad freight and passenger depots established by the Oregon Washington Railroad and Navigation line. Although initially owned and controlled by various rail and land companies, Benton City was publicly incorporated in 1945. Benton City's population is approximately 2,624 (2000 U.S. Census), inhabiting 1.75 square miles.

The City of Prosser has a population of almost 5,000 (4,882 in census 2000) within the City boundaries, which encompass almost two square miles. Outside the City boundaries, the designated urban growth center contains another 5,000 residents. The City is bisected by the Yakima River – the older downtown section is south of the River, between the River and the Horse Heaven Hills. Newer development and residential areas are north of the River. The Burlington Northern railroad tracks also pass through the City within a block of the downtown area. In addition to serving as the historic county seat, Prosser serves as a local center supporting surrounding agricultural uses, including several area wineries, fruit orchards, pasture and dryland wheat fields. Within and adjacent to the City are several agricultural processing facilities and fertilizer plants.

Paterson is an unincorporated community along the north bank of the Columbia River, on the southern edge of Benton County. The original town was named after a local settler in 1901, and served as a center for local agriculture. Paterson now supports wineries and recreation.

Plymouth is an unincorporated community 13 miles east of Paterson, on the north bank of the Columbia River. Plymouth was founded in 1907 as an agricultural center by the Benton County Irrigation Company. The town site was the landing for the ferry from Umatilla before the current bridge was built.

Finley is an unincorporated community immediately southeast of Kennewick, consisting of a mixture of low-density residential development, small farms, and open space. Finley was a construction camp, and later a train station and post office. The construction camp serviced the Northern Pacific Irrigation Project, circa 1905 – 1906. The area is now home to several large chemical plants.

Whitstran is a small, unincorporated area immediately northeast of Prosser, along the northern bank of the Yakima River. The area includes low-density residential use, a few small commercial establishments, small farms, and other agricultural uses.

2.5 Transportation and Commuting Patterns

Benton County is strategically located at the nexus of several main transportation routes for the region, including highways, rail, rivers, and air travel.

Benton County contains several key regional highways. The County is traversed east-west by Interstate 82, passing south of the cities of West Richland, Richland, and Kennewick. I-82 links Benton County with I-90 to the north and west through Yakima, and to I-84 to the south in northern Oregon. The Tri-Cities area is connected directly to I-82 via I-182, which passes through Pasco, across the Columbia River, and through the City of Richland, crossing the Yakima River. The limited access interstate highways servicing the Tri-Cities carry between 30,000 and 50,000 vehicles per day. Other major highways passing through the County include Highway 395 and Highway 12. Highway 395 links Hermiston, Pendleton, and parts south in Oregon with the Tri-Cities and northbound traffic to Spokane and the Canadian border. Highway 12 links the Puget Sound area with the Midwest United States. Other routes of significance to the County include Route 240 from Kennewick through Richland and into the Hanford Site, Route 24 from Yakima in Yakima County entering Benton County and the Hanford Site from the west, and Route 14 following the northern bank of the Columbia River from McNary Dam west (downriver). Route 221 links Paterson with Prosser, and provides access to the southwestern portion of Benton County. Other State- and County-maintained roads provide critical access to local communities.

Ben Franklin Transit provides community route bus service throughout the area. This bus service radiates from the Bob Ellis/Knight Street Transit Center providing local service within the Richland city limits and transportation to the neighboring communities of West Richland, Richland, Kennewick, and Pasco. The Tri-Cities area is served by more than 35 local, regional and national trucking lines. Several taxi and limousine services operate in the Richland area. Greyhound Bus Lines also serves the Tri-Cities.

Benton County is served by two national freight rail carriers, the Burlington Northern Santa Fe (BNSF) and the Union Pacific (UP). Both rail carriers operate intermodal freight terminals in the Tri-Cities area, and provide mainline freight rail service to 35 states. In addition, the northwest regional hub for the BNSF is in Pasco. A BNSF rail spur across the Yakima River into Richland services the Port of Benton.

Benton County's location on the Columbia River provides direct access to the Columbia-Snake River System – one of the most modern intermodal transportation networks in the country. This commercial waterway extends from the Pacific Ocean over 465 miles into eastern Washington and Idaho, and includes eight dam and lock complexes. This transportation system is accessed through the Port of Benton, the Port of Kennewick, and the Port of Pasco.

The Port of Benton includes over 6,000 feet of Columbia River frontage on the west bank of the River in Richland. The area is zoned for heavy industrial use, and includes dock facilities near the north end of the site. The Port of Benton is frequently used for special shipments of large items, heavy equipment, and construction materials destined for the DOE Hanford Site to the immediate north. Several years ago, a fire destroyed the railroad trestle connecting the Port of Benton rail lines to locations outside the City of Richland. A number of businesses suffered loss of revenue while the trestle was being replaced.

The Port of Kennewick owns property zoned for light and/or heavy industrial use at various locations along the Columbia River, primarily in or southeast of Kennewick. Key industrial sites include:

- Vista Field Airport – located in Kennewick, includes an airfield and light industrial development.
- Dickerson Industrial Park – 182 acres light industrial park at the intersection of I 82 and Hwy 395.
- Finley Industrial Site – three parcels with dual rail access approximately 8 miles southeast of Kennewick.
- Hover Industrial Site – 197 acres with rail and road access, and potential barge docks.
- Plymouth Industrial Site – 296 acres with rail and road access just west of Plymouth.
- Twin Tracks Industrial Park – 163 acres with rail access, approximately 6 miles southeast of Kennewick.

There are also extensive facilities for containerized cargo as well as bulk cargo at the Port of Pasco (in Franklin County).

Benton County is served by four public airports, seven private airports, and six heliports. The Tri-Cities Airport (in Pasco) provides commercial air carrier service to the County. The Richland Airport is a commuter airport. The Prosser Airport and Vista Field in Kennewick are general aviation airports.

Employment at the Hanford Site and among related contractors with offices in Richland have a dominant influence on commuting patterns in the Tri-Cities area. SR 240, which originates at US 395 in Kennewick, links Richland and Kennewick and provides a western bypass route around Richland to the Hanford Site. Other key access routes to Hanford are through the older downtown section of Richland on George Washington Way, and from the northwest on SR 24 connecting to SR 240. Some of the major Site-related employers use staggered working hours to reduce traffic delays; however, local traffic backups do occur during the primary morning and evening commutes.

2.6 Regional Influences

Primary regional influences on Benton County's hazard mitigation planning include the U.S. Department of Energy/Richland Operations (DOE/RL) operations and environmental cleanup on the Hanford Site, the Columbia Generating Station fixed nuclear power plant owned and operated by Energy Northwest (also located on the Hanford Site), and the U.S. Army's plans to destroy chemical agents through incineration at the Umatilla Chemical Depot in Oregon.

2.6.1 Hanford Site

The U.S. Department of Energy Hanford Site dominates the region in terms of its geographic size, numbers of employees and contractors, and expenditures. The Hanford Site was developed in 1943 as part of the Manhattan Project, developing plutonium for the world's first nuclear weapons. The Site occupies approximately 450 square miles within the northern portion of Benton County.

As a result of past activities on the Hanford Site, the area contains numerous waste units that contain either radioactive, hazardous, mixed (both radioactive and chemical), or nonradioactive/nonhazardous solid waste. There is contamination of onsite soil, groundwater, vadose zone, and sediment by various hazardous and radioactive substances. Radionuclides are also routinely identified in the Columbia River. An estimated five billion cubic yards of solid and dilute liquid waste, including hazardous substances, mixed waste, and hazardous waste and constituents, is reported to have been disposed into the soil column at the Hanford Site.

DOE, U.S. Environmental Protection Agency Region X and the State of Washington established the Tri-Party Agreement on May 15, 1989. The Tri-Party Agreement provides an approved framework for investigation and remediation of hazardous and mixed waste contamination at the Hanford Site. The Tri-Party Agreement is periodically revised to reflect changing schedules and the results of additional investigations and research.

The present focus of the Hanford Site is waste management and environmental restoration of the Site itself. Other ongoing activities include scientific and environmental research, development and application of radioactive waste and hazardous waste management technology, and design, construction, and operation of major energy-related test and development facilities. Cleanup progress over the next 20 to 30 years is expected to reduce the Hanford Site's physical area and workforce.

DOE/RL has developed extensive emergency preparation and response plans for various contingencies at the Hanford Site. These plans are coordinated with local emergency management officials and responders. In turn, local emergency management plans contain provisions for responding to incidents at the Hanford Site. Benton County's Comprehensive Emergency Management Plan addresses the County's response to an incident occurring at a facility operated by DOE/RL or its contractors.

2.6.2 Umatilla Chemical Depot

Umatilla Chemical Depot (UMCD) is a 19,728-acre U.S. Army facility in north-central Oregon. It lies three miles south of the Columbia River in Umatilla and Morrow Counties. The facility was established in 1941 as an ordnance facility for storing conventional munitions. In 1962, the

Army began storing chemical munitions at the facility. The chemical munitions stockpiled at UMCD include projectiles, rockets, land mines, spray tanks, and bombs containing the nerve agents GB (sarin) and VX. In addition, ton containers containing the blister agent HD (commonly known as mustard agent) are also stored onsite.

The UMCD is currently undergoing closure activities, including planned disposal of munitions and environmental restoration. Disposal of the chemical munitions is projected to occur onsite through operation of a newly constructed incineration facility. The incineration facility is scheduled to begin agent destruction in mid-2004. Current estimates are that it will take a minimum of 70 months to complete the destruction of the agents.

The U.S. Army has developed extensive emergency preparation and response plans for various contingencies at the UMCD. These plans are coordinated with local emergency management officials and responders. In turn, local emergency management plans contain provisions for responding to incidents at the UMCD. Benton County's Comprehensive Emergency Management Plan includes specific annexes to coordinate the response to an incident occurring at the UMCD.

2.6.3 Columbia Generating Station

Columbia Generating Station (CGS) is owned and operated by Energy Northwest on land leased from the U.S. Department of Energy on the Hanford Site, about twelve miles northwest of Richland. CGS is an 1175-megawatt nuclear power plant that began commercial power generation in 1984. CGW is licensed by the Washington State Energy Facility Site Evaluation Council (EFSEC) and regulated by the federal Nuclear Regulatory Commission (NRC).

FEMA is responsible for overseeing and evaluating emergency preparedness activities aimed at off-site hazards. FEMA monitors off-site emergency preparedness for compliance with federal laws, regulations, and guidelines. A variety of state agencies, local government emergency management offices, and Energy Northwest coordinate to provide off-site emergency preparedness. These agencies in coordination have developed emergency plans and procedures to ensure the public health and safety in the event of an incident involving a release of radiation off-site.

Energy Northwest provides funding to affected local and state agencies for CGS off-site emergency preparedness programs and activities. The funding is administered by EFSEC. The CSG off-site preparedness program partners include: Benton, Franklin, Grant, Adams, Walla Walla, and Yakima County emergency management agencies; Washington Military Department, Emergency Management Division; Washington State Department of Health, Division of Radiation Protection; Washington State Department of Agriculture; and the Washington State Patrol. Benton County Emergency Services is the agency tasked with CSG off-site emergency preparation for Benton County. Benton County's Comprehensive Emergency Management Plan addresses Benton County's response to an incident occurring at CGS.

2.7 Critical Facilities

Critical facilities for hazard mitigation planning are those facilities that are vital to the emergency response and recovery activities and continued delivery of key government services or that may significantly impact the public's ability to recover from the emergency. These facilities include 911 centers, emergency operations centers, police and fire stations, public works facilities, sewer

and water facilities, hospitals and other medical facilities, bridges and key roads, shelters, jails and correctional facilities, public services buildings, courthouses, and other public facilities such as schools (particularly those which double as shelters).

Many of the critical facilities in the County that may be directly affected by each hazard are identified in Chapters 4 and 5, or are identified in the information provided in Section 2 – Section 7.

In addition, under the direction of the U.S. Department of Homeland Security, Office for Domestic Preparedness, Benton County Emergency Management conducted a county assessment against terrorism incidents involving weapons of mass destruction. This terrorism assessment also rated facilities for their “criticality” to the County. This factor assessed the usefulness of the facility to the local population, economy, and government, as well as its importance to the continuance of the jurisdiction. A list of facilities ranked for their criticality is maintained by BCEM as part of their weapons of mass destruction terrorism assessment. Facilities considered the most critical during this assessment included power, communication (including cell tower sites), sewer, and water utilities, government buildings, McNary Dam, the Blue and Cable bridges over the Columbia River, and the Columbia Center Mall.

2.8 References/Literature Cited

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